



Radioactive Material License Guide

Portable Gauges Application

**Louisiana Department of Environmental Quality
Radiation Section
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Baton Rouge, Louisiana 70821-4312
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Baton Rouge, LA 70802
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PURPOSE OF LICENSING GUIDE

This guide provides instructions to an applicant preparing an application for a portable gauge license. This type of specific license is used for authorizing the possession and use of radioactive material in the form of sealed sources contained in portable gauges. Some examples of portable gauges are moisture-density gauges or x-ray fluorescence devices (XRF).

This guide addresses a variety of radiation safety issues associated with use of portable gauges. The application and materials submitted must be sufficient to demonstrate that the proposed equipment, facilities, personnel, and procedures are adequate to protect the public health and safety of the residents of Louisiana.

APPLICABLE REGULATIONS

It is the licensee's/applicant's responsibility to have available up-to-date copies of Louisiana Regulations, LAC Title 33, Part XV, Radiation Protection. Some of the applicable regulations in LAC 33:XV are Chapter 4, 102, and 1013.

FILING AN APPLICATION

A license application for radioactive material should be submitted on Form DRC-11, "Application for Radioactive Material License", Form DRC-13, "Schedule of Radioactive Material", and Addendum To Permit which can all be found at <https://deq.louisiana.gov/resources/category/radiation-forms-guides-and-information>. The applicant should complete all items on the application form delineated in this licensing guide:

- A. Any section in the application which is not applicable should be designated with N/A.
- B. Material submitted on a separate attachment should be clearly identified; for example, Attachment A, Page 5, Item C.
- C. The application should be completed and mailed to:

Mailing address: Louisiana Department of Environmental Quality
Emergency & Radiological Services Division
Radiation Section
P. O. Box 4312
Baton Rouge, LA 70821-4313

Physical address: Louisiana Department of Environmental Quality
Emergency & Radiological Services Division
Radiation Section
602 N. 5th Street
Baton Rouge, LA 70802

- D. Submit one copy of the application and all attachments to the Department. The applicant should retain one copy, since the license will require as a condition that the institution follow the statements and representations set forth in the application and any supplements following.
- E. Since the space on Form DRC-11 may not be sufficient to contain all of the required information, additional sheets should be attached. Each separate sheet or document submitted with the application should be identified by heading indicating the appropriate item number. When completed, Form DRC-11 should be signed and dated by a representative of the institution's management.

LICENSE FEES:

A fee is required for all initial applications and for licenses that are required to be reissued. The applicant should refer to the Department's fee schedule in LAC 33:XV.Chapter 25 to determine the amount of the fee that must accompany the application. Review of the application will not begin until the Department has received the proper fee. There is also an annual fee associated with a Radioactive Material License. If you have any questions concerning the fee or the amount to submit, do not hesitate to contact the Department, (225-219-3041)

CONTENTS OF APPLICATION:

DRC – 11, Application for Radioactive Material License:

1. Name of Applicant and Mailing address

List the legal name of the applicant/corporation or company, including the designation "doing business as", or other legal entity with direct control and responsibility for the radioactive material.

Provide the mailing address and telephone number.

2. Check "New License" or "Renewal".

3. Department, Location or Address(es) At Which Used and/or Stored

If the mailing address in Item 1 is a P. O. Box, or if different from the location where the gauge is located, then enter the street address where the gauge will be located or other descriptive address (such as 5 miles east on Highway 10, Anytown, Louisiana) to allow us to easily locate your facility.

Provide an email address for the person who can answer questions about the application. This will most likely be the Radiation Safety Officer.

4. Radiation Program Personnel

Provide the name of the Radiation Safety Officer (RSO) - a qualified individual should be designated the responsibility for radiation protection. Individuals who will use or supervise the use of radioactive materials should be listed and the qualifications and training of these individuals given on the Form DRC-13, "Radiological Qualifications and Training."

The RSO, at a minimum, should have completed either of the following two methods:

- a. The portable gauge manufacturer's or distributor's training program for users or for RSOs, with hands-on experience with portable gauges

OR

- b. An equivalent training course – See Appendix D of this guide.

Each gauge user should have completed either of the following two methods:

- a. The portable gauge manufacturer's or distributor's training program for users or for RSOs, with hands-on experience with portable gauges

OR

- b. An equivalent training course – See Appendix D of this guide.

If the responsible individual has completed the device manufacturer's program, you should state in your application the title of the course, where and when the course was completed, and the name of the course instructor (a certificate).

If the responsible individual has received training other than that provided by the device manufacturer, you should state where and when the training was received, the topics covered in the training, and the name and qualifications of the training instructor.

Maintaining documentation of training (including valid training certificates) for each Gauge User on file for inspection purposes is required by the Department to demonstrate that personnel are adequately trained.

RSO Duties and Responsibilities

Submit a description of the duties and responsibilities of the RSO. An example of typical duties and responsibilities that may be found in Appendix A.

5. Personnel Monitoring: Example of program see Appendix G

Applicants must do either of the following:

- a. Perform an evaluation demonstrating that unmonitored individuals are not likely to receive, in one year from sources external to the body, a dose in excess of 10 percent of the limits specified in LAC 33:XV.410.A and maintain a record of this evaluation for inspection by the department.

OR

- b. provide and require the use of personnel monitoring devices- dosimetry. All personnel dosimetry shall be processed and evaluated by a dosimetry processor that has accreditation from the National Voluntary Laboratory Accreditation Program (NVLAP) of the National Institute of Standards and Technology; and approved in this accreditation process for the type of radiation.

6a. Contamination Surveys:

Contamination surveys are not necessary for sealed sources, except in the case of a leaking source.

6b. Radiation Area Surveys:

Radiation area surveys are not required for portable density gauges.

6c. Environmental Surveys:

Environmental surveys do not apply to sealed sources.

7. Leak Tests:

The Department requires leak testing in accordance with LAC 33:XV.426. Leak tests will be required at six (6) month or up to three (3) year intervals, depending on the manufacturer and model of the sealed source. Check with manufacturer and SSD for the correct leak test interval. Leak test records must be maintained in accordance LAC 33:XV.473 for inspections.

Please state how this service will be performed. For example, it may be performed by the manufacturer, a consultant or by the applicant using an approved leak test kit.

If the applicant proposes to conduct the entire of leak test sequence themselves, a complete description of method (including instrumentation, material, procedures, sample calculations,

and the training and experience of the individual evaluating the wipes) must be included. An example of leak test program can be found in Appendix F.

Leak tests for transfers and disposal must be performed no longer than 6 months prior to the transfer.

8. Waste Disposal:

Licensees must dispose of radioactive material in accordance with LAC 33:XV.460. Please indicate the firm or individual that will handle disposal of sources. Normally, sources can be returned to the manufacturer for disposal. Radioactive material may only be returned to a person holding a specific license for receipt and/or disposal of such sources. Before transferring radioactive material, it is the licensee's responsibility to verify that the recipient is properly licensed and authorized to receive the licensed material. Records of all disposals and transfers shall be maintained for inspections in accordance to LAC 33:XV.478. See Appendix I for example.

9a. Health Physics Program:

Operating Procedures:

ALARA

In order to minimize radiation dose to gauge users and to members of the public, the applicant must adopt operating procedures that comply with the As Low As is Reasonably Achievable (ALARA) principles. See Appendixes B and C for an example.

RSO Duties and Responsibilities

The RSO is responsible for assuring that the gauges are used in a manner that is ALARA. The RSO is responsible for completing and/or performing certain radiation protection procedures that are required in accordance with applicable regulations in LAC 33:XV. See Appendix A for an example of RSO duties and responsibilities.

Material Receipt and Accountability

Licensed materials must be tracked "from cradle to grave" in order to ensure sealed source/gauge accountability; identify when sealed sources/gauges could be lost, stolen or misplaced; and ensure that possession limits listed on the license are not exceeded.

Licensees must:

- Maintain records of receipt, transfer and disposal of portable gauges
- Conduct physical inventories every 12 months (or some other intervals justified by the applicant and approved by the department) to account for all sealed sources
- Update transactions in the National Source Tracking System (NSTS) annual inventory reconciliation, if applicable.

Use of Gauge

See Appendix J for example of “use of gauge procedures”.

- **Leak Test Procedures.** See Appendix F for example.

- **Routine Maintenance Procedures-** Licensees should routinely clean and maintain gauges according to the manufacturer’s written recommendations and instructions. More extensive maintenance that requires removal of the source from its shielded position or removal of the source rod from the device will be performed only by the gauge manufacturer. Unless specifically authorized on your license, you may not do any maintenance or cleaning unless the source is safely shielded within the gauge.

- **Non-Routine Maintenance Procedures (if applicable).** See Appendix E for example.

- **Emergency Procedures.** See Appendix K for example.

- **Postings:**
Provisions should be made for posting of the following:
 - 1) DRC-3, NOTICE TO EMPLOYEES (Form may be found at <https://deq.louisiana.gov/resources/category/radiation-forms-guides-and-information>).
 - 2) A copy of the Louisiana Radiation Regulations. (May be found at <https://deq.louisiana.gov/page/radiation>)
 - 3) A copy of the license, with all current amendments.
 - 4) A copy of operating and emergency procedures.
 - 5) Notices of violations regarding radiological working conditions issued by the Department, and responses to these violations.

NOTE: Items 2, 3, and 4 may be satisfied by posting a notice of where these documents can be found.

- **Transportation of devices:**
Procedures for transporting devices to and from work sites. Applicants must commit that the devices will be fully secured within the transportation vehicle and away from the passenger compartment and that the transportation of licensed material be carried out in accordance with Section 71.5 of 10 CFR Part 71 and U. S. Department of Transportation Regulations. It is your obligation to obtain a copy of the DOT regulations on transportation of radioactive materials. The requirements for package labeling are in Subpart E of 49 CFR Part 172 of the DOT Regulations. General requirements for shipping and packaging radioactive material are in Subpart I of 49 CFR Part 173 of the DOT regulations. You must state the packaging and

transport of the device will be carried out in accordance with applicable DOT regulations.

- **Security: See Appendix H for example**

Develop, implement, and maintain security procedures to prevent theft, loss, or sabotage. These procedures will contain instructions to prevent unauthorized access, removal, or use of the fixed gauges; including at temporary jobsites if authorized on the license¹. Whenever a gauge is not under the control and constant surveillance of the licensee, it shall be secured by two independent physical controls that form tangible barriers to secure it from unauthorized removal².

¹NUREG 1556, Vol. 4

²LAC 33:XV.326.B (This requirement is explicitly prescribed for Portable Gauges)

- **Storage Procedures:**

Describe the storage locations at each address listed in Item 3 of the application and submit a diagram showing where the gauge will be stored when not at field locations. For example, is the storage location a closet, a separate room dedicated to the storage of gauges only, or locked cabinet?

- **Utilization Records:**

Each licensee should maintain current records, which would be kept available for inspection by the Department, showing the following information for each source of radiation:

- (a) make, model number, and a serial number of each source of radiation used;
- (b) the identity of the person to whom assigned; and
- (c) locations where used and dates of use.

9b. Physical Facilities:

The application will be approved if, among other things, the applicant's proposed equipment and facilities are adequate to protect health and minimize danger to life or property. Therefore, you should provide information concerning your equipment and facilities. It is required that licensed material stored in an unrestricted area be secured from unauthorized removal from the place of storage and that licensed material in an unrestricted area and not in storage, be tended under the constant surveillance and immediate control of the licensee. Explain how this requirement will be met.

You should state that the device will be stored in a locked enclosure such as the transport vehicle, store room, closet, shed, etc., in a way that will prevent access by unauthorized persons. You should keep in mind that the device needs to be in storage or physically

watched by authorized user at all times. It is not acceptable for a device to be chained to a post or left lying unattended at the place of use during lunch or breaks, because the device would then be accessible to unauthorized persons. See Appendix H for security of the gauge.

10. Health Physics Instrumentation:

Normally, health physics instrumentation will not be required, but any instruments available for radiation surveys or leak testing should be listed.

11. General Instrumentation:

This is not applicable, but you may list any other radiation detection instruments available, but not used for health physics surveys or monitoring.

12. Medical Supplements:

Not applicable.

13. Industrial Radiography Supplements:

Not applicable.

14. If a representative of another company assisted the applicant in completing the application, then their name and company affiliation should be listed.

DATE AND SIGNATURE: THE APPLICATION MUST BE SIGNED AND DATED.

FORM DRC -13

SCHEDULE OF RADIOACTIVE MATERIALS:

Sealed Sources: Sealed sources should be entered in the following section:

Identify the isotope and quantity of the sealed source, the manufacturer of the source, model number and storage container in which the source will be stored, transferred or used. Indicate the particular use of each individual source and/or type of device or tool in which it will be employed.

NOTE: Radium sources are radioactive material and should be included in this application.

RADIOLOGICAL QUALIFICATIONS AND TRAINING:

Complete the requested information for all individuals under Item 4, "Radiation Program Personnel," Form DRC-11. This information may be submitted on a separate attachment if desired, but the attachment should be referenced.

ADDENDUM TO PERMIT APPLICATIONS:

The "ADDENDUM TO PERMIT APPLICATIONS PER LAC 33:I.1701. This form must be completed before a license can be issued. This form can be found at:
<http://www.deq.louisiana.gov/portal/tabid/240/Default.aspx>

License Amendment or Termination:

A. Amendment

1. Submit an amendment request by letter, rather than on an application form. Always reference your license number when corresponding with LDEQ/Radiation Section. Amendments submitted on an application form may cause a processing delay.
2. Specify exactly what you want changed on the license. Always furnish a justification for the request.
3. Plan ahead whenever possible. For instance, if you have placed a bid on a job and know that an amendment to the license will be required (i.e., new storage/use location, additional radioactive material, etc.), forward your request for amendment to LDEQ/Radiation Section immediately. **PLEASE DO NOT WAIT** until after you are awarded the contract to request an amendment.
4. Send your amendment request to the LDEQ/Radiation Section at the following address:

Mailing address: Louisiana Department of Environmental Quality
Emergency & Radiological Services Division
Radiation Section
P. O. Box 4312
Baton Rouge, LA 70821-4313

Physical address: Louisiana Department of Environmental Quality
Emergency & Radiological Services Division
Radiation Section
602 N. 5th Street
Baton Rouge, LA 70802

5. You will receive your license amendment by mail.
6. When requesting the relocation of a permanent storage/use facility, note that the new facility must be authorized on the license before relocation can occur. After the amendment is issued and you have relocated to your new facility it is important that you submit a request to remove the former facility.

B. TERMINATION

1. To terminate your license, the department requires the following.
 - a. Request should specify that you want to **terminate** the license. You can use RAD 14 Radioactive Material License Termination & Location Closure form.
<https://deq.louisiana.gov/resources/category/radiation-forms-guides-and-information>

- b. Copies of current leak tests required by LAC 33:XV.426, if applicable.
 - c. All fees shall be paid/current. Not paying your annual fee does **NOT** automatically terminate your license.
 - d. Documentation of radioactive material disposition and current leak tests required by LAC 33:XV.426.A.1.
 - e. All Notices of Deficiencies shall be resolved through the LDEQ/Radiation Section and Enforcement Division.
2. LDEQ/Radiation Section reserves the right to conduct a confirming radiation survey and facility evaluation prior to the release of controlled areas for unrestricted use. It is the licensee's responsibility to decontaminate facilities to levels allowing release for unrestricted use. If residual radiation levels or contamination levels exceed the applicable release limits contained in LAC 33:XV.Chapter 4, your license will not be terminated until release limits have been met.

APPENDIX A

RSO Duties and Responsibilities

The RSO's main objective is to ensure radiological safety and compliance with Louisiana Department of Environmental Quality regulations and with the conditions of the license.

Typically, these duties and responsibilities include ensuring the following:

- Gauges are used in a manner such that the radiation dose to workers and the public is **As Low As is Reasonably Achievable (ALARA)**
- RSO stops licensed activities which the RSO considers unsafe
- Possession, use, storage, and maintenance of gauges are consistent with the limitations in the license and the manufacturer's recommendations and instructions
- Individuals using gauges are properly trained
- Personnel monitoring devices are used and exchanged at the proper intervals; records of the results of such monitoring are maintained
- Gauges are properly stored and secured against unauthorized removal
- Gauges are leak tested as required by the license
- Proper authorities are notified in case of accident, damage to gauges, fire, or theft
- Unusual occurrences involving the gauge (e.g., accident, damage) are investigated, cause(s) and appropriate corrective action are identified, and corrective action is taken
- Audits are performed at least annually, documented, and corrective actions taken
- Radioactive material is transported in accordance with all applicable DOT requirements
- Radioactive material is disposed of properly
- Appropriate records are maintained
- Up-to-date license is maintained, and amendment and renewal requests are submitted in a timely manner.

APPENDIX B

ALARA PROGRAM

Each licensee **shall** develop and implement a written program to maintain radiation doses and releases of radioactive material in effluents to unrestricted areas as low as reasonably achievable in accordance with LAC 33:XV.406.

To satisfy this requirement:

1. the management, radiation safety officer, and all authorized users shall participate in the establishment, implementation, and operation of the program as required by these regulations; or
2. for licensees that are not medical institutions, management and all authorized users shall participate in the program as required by the radiation safety officer.

The ALARA program shall include an annual review by management or the radiation safety officer of summaries of the types and amounts of radioactive material used, occupational dose reports and continuing education and training for all personnel who work with or in the vicinity of radioactive material. The purpose of the review is to ensure that individuals make every reasonable effort to maintain occupational doses, doses to the general public, and releases of radioactive material as low as reasonably achievable, taking into account the state of technology and the cost of improvements in relation to benefits.

The licensee shall retain a current written description of the ALARA program for the duration of the license. The written description shall include:

1. A commitment by management to keep occupational doses as low as reasonably achievable;
2. a requirement that the radiation safety officer brief management once each year on the radiation safety program;
3. personnel exposure investigational levels that, when exceeded, will initiate an investigation by the radiation safety officer of the cause of the exposure and a consideration of actions that might be taken to reduce or eliminate the probability of recurrence.

Please submit a copy of your ALARA program for the Department's review. A sample ALARA program is located at the end of this guide.

APPENDIX C

SAMPLE ALARA PROGRAM

The following conditions describe the program followed by _____ to ensure that occupational radiation exposures to employees engaged in the use of radioactive equipment are kept as low as reasonably achievable.

1. MANAGEMENT COMMITMENT

_____ IS COMMITTED TO MAKE EVERY REASONABLE EFFORT TO MINIMIZE RADIATION EXPOSURES TO EMPLOYEES, THROUGH THE FOLLOWING CONTROL MEASURES:

- a. Personnel will be made aware of management's commitment to maintain low exposure levels.
- b. Management will periodically review operating procedures with radiation safety officer to determine steps taken to reduce exposures.
- c. Management will ensure that the person, or persons, selected for Radiation Safety Officer responsibilities are fully qualified to administer all aspects of a radiation protection program.
- d. Management will ensure that all employees engaged in the use of radioactive equipment are fully trained in the area of radiation safety. This will be reviewed at least once a year, and additional training will be scheduled as necessary.
- e. The RSO has full authority to enforce safe operation, and to communicate as required with appropriate levels of management to halt an operation he deems unsafe.

2. VIGILANCE BY THE RSO AND RADIATION PROTECTION STAFF

The RSO has the responsibility to monitor the Radiation Safety Program to ensure that exposures are as low as reasonably achievable, and to search for new and better ways to perform jobs with less exposure. The following aspects apply to this responsibility:

- a. The RSO shall know the origins of radiation exposure and be aware of trends in exposures.

- b. Should unusual exposures occur, the RSO shall initiate an investigation of the circumstances to determine causes and prevent the likelihood of recurrence. Operating procedures should periodically be reviewed to identify situations in which exposures can be reduced.

- c. The RSO shall be responsible for ensuring that the equipment used is maintained in good working order and used properly. Written procedures for use of the equipment are to be available and followed.

Printed Name: _____

Signature: _____
(Management)

Phone Number: _____

Fax Number: _____

E-mail address: _____

Appendix D

Criteria for Acceptable Training Courses for Portable Gauge Users

Course Content:

Acceptable course content for training courses for portable gauge users includes the following:

- 1.5 to 2 hours of radiation safety and regulatory requirements, emphasizing practical subjects important to safe use of the gauge; radiation versus contamination; internal versus external exposure; concepts of time, distance, and shielding to minimize exposure; control and surveillance of gauges; location of the sealed source within the portable gauge; inventory; recordkeeping; incidents; licensing and inspection by the regulatory agency; need for complete and accurate information; employee protection; and deliberate misconduct
- 1.5 to 2 hours of practical training, to include portable gauge theory, operating procedures, emergency procedures, security, maintenance, and transportation procedures; and field training emphasizing radiation safety, including dry runs of setting up and making measurements with the gauge, controlling and maintaining surveillance over the portable gauge, performing routine cleaning and lubrication, packaging and transporting the gauge, storing the gauge, and following emergency and security procedures

Course Examination:

Prospective gauge users participating in training courses should achieve at least a 70-percent score on a 25- to 50-question written test. The test should include the following:

- an emphasis on radiation safety of portable gauge storage, security of gauges while on jobsites, use, sealed source location, maintenance, and transportation, rather than the theory and art of making portable gauge measurements
- review of correct answers to missed questions with the prospective gauge user following the scoring of the test

Instructor Training and Experience:

Instructors should have, at a minimum, the following:

- successful completion of a portable gauge user course
- successful completion of an 8-hour radiation safety course or radiation safety officer training course

- documentation of 8 hours of hands-on experience with portable gauges

Notes:

- Licensees must maintain records of training for 3 years following the last use of licensed material by the authorized user.
- Initial and recurrent (every 3 years) U.S. Department of Transportation Hazardous Material (HAZMAT) training is also required for all gauge users that transport gauges.

Online Courses:

Online training for portable gauge users is acceptable. The online training topics should follow the suggested Course Content on the previous page. Any online training should be supplemented by the practical hands-on training also described under Course Content. The applicant/licensee should demonstrate how it will meet the training described under Course Content and may consider providing a copy of the curricula covered in the course. Online training courses should also include an examination described under Course Examination.

APPENDIX E

Information Needed To Perform Non-Routine Operations

Nonroutine maintenance or repair (beyond routine cleaning and lubrication—see Figure 8-6 of NUREG-1556, Volume 1, Revision 2) may involve detaching the source rod from the portable gauge and other activities that could result in higher radiation doses. If this maintenance or repair is not performed properly, with attention to good radiation safety principles, the gauge may not operate as designed, and personnel performing these tasks could receive radiation doses exceeding Louisiana Department of Environmental Quality limits.

In a short period of time (5–10 minutes), a typical moisture density gauge with its sources unshielded can deliver 0.05 sievert (Sv) [5 rem] to a worker's hands or fingers (i.e., extremities), assuming the extremities are 1 centimeter from the sources. The threshold for extremity monitoring is 0.05 Sv [5 rem] per year.

Therefore, applicants wishing to perform **nonroutine** maintenance must use personnel with specialized training and follow appropriate procedures consistent with the manufacturer's instructions and recommendations that address radiation safety concerns (e.g., use of radiation survey meter, shielded container for the source, personnel dosimetry). Accordingly, applicants should provide the following information:

- Describe the types of work (e.g., maintenance, cleaning, repair) to be performed that necessitate detaching the source or source rod from the device or that could cause personnel to receive radiation doses exceeding NRC limits. The principal reason for obtaining this information is to help evaluate the qualifications of individuals who will conduct the work and the radiation safety procedures they will follow.
- Identify who will perform nonroutine maintenance, and provide their training and experience in performing nonroutine maintenance. Provide the training and experience for the radiation safety officer who will oversee the performance of nonroutine maintenance.
- Provide procedures for safe handling of the radioactive source while the source or source rod is detached from the gauge. These procedures should ensure the following:
 - Doses to personnel and members of the public are within regulatory limits and as low as is reasonably achievable (e.g., accomplished by the use of shielded containers or shielding).
 - The source or source rod is secured against unauthorized removal access or is under constant surveillance.
 - Appropriate labels and signs are used.

- Manufacturer’s instructions and recommendations are followed.
- Confirm that individuals performing nonroutine maintenance on gauges will always wear both whole body and extremity-monitoring devices.
- Verify possession of at least one survey instrument meeting the following criteria:
 - capable of detecting gamma radiation
 - capable of measuring from 0.01 to 0.5 millisievert per hour [1 to 50 millirem per hour]
 - calibrated at least annually
 - calibrated by a person specifically licensed by the NRC or an Agreement State to calibrate radiation detection instruments
 - checked for functionality prior to use (e.g., with the gauge or a check source)
- Describe steps to be taken to ensure that radiation levels in areas where nonroutine maintenance will take place do not exceed the limits under LAC 33:XV.421, “Radiation Dose Limits for Individual Members of the Public.” For example, applicants can do the following:
 - Commit to performing surveys with a survey instrument (as described above).
 - Specify where and when surveys will be conducted during nonroutine maintenance.
 - Commit to maintaining records of the survey (e.g., who performed the survey, survey date, instrument used, measured radiation levels correlated to location of those measurements) for 3 years after the record is made.

APPENDIX F LEAK TEST PROGRAM

Training:

Before allowing an individual to perform leak testing, the licensee must ensure that he or she has sufficient classroom and on-the-job training to show competency in performing leak testing and sample analysis independently.

Classroom training may be in the form of lecture, online, video, hands-on, or self-study and should cover the following subject areas:

- principles and practices of radiation protection
- radioactivity measurements, monitoring techniques, and instrument use
- mathematics and calculations used for measuring radioactivity
- biological effects of radiation

Appropriate on-the-job training consists of the following:

- observing authorized personnel collecting and analyzing leak test samples
- collecting and analyzing leak test samples under the supervision and in the physical presence of an individual authorized to perform leak testing and sample analysis

Facilities and Equipment:

- To ensure achieving the required sensitivity of measurements, analyze leak tests in a low- background area.
- Use a calibrated and operable survey instrument to check leak test samples for gross contamination before they are analyzed.
- Analyze the leak test sample using an instrument that is appropriate for the type of radiation to be measured (e.g., NaI(Tl) well-counter system for gamma emitters, liquid scintillation for beta emitters, and gas-flow proportional counter for alpha emitters).
- If the sensitivity of the counting system is unknown, determine the minimum detectable activity (MDA).

The MDA may be determined using the following formula:

$$MDA = \frac{2.71 + 4.65 \sqrt{(bkg \times t)}}{t \times E}$$

where: *MDA* = minimum detectable activity in disintegrations per minute (dpm)

bkg = background count rate in counts per minute (cpm)

t = background counting time in minutes

E = detector efficiency in counts per disintegration

Frequency for Conducting Leak Tests of Sealed Sources:

Leak tests will be conducted at the frequency specified in the respective Sealed Source and Device registration certificate. If a sealed source is not registered, leak tests should be conducted at 6 month intervals, unless a different interval is established during the licensing process. Leak testing of sealed sources may be required by license condition.

Procedure for Performing Leak Testing and Analysis:

- For each source to be tested, list identifying information such as the sealed source serial number, manufacturer, model number, radionuclide, and activity.
- Use a radiation survey meter to monitor exposure.
- Prepare a separate wipe sample (e.g., cotton swab or filter paper) for each source.
- Number each wipe to correlate with identifying information for each source.
- Wipe the most accessible area where contamination would accumulate if the sealed source were leaking, but do not wipe the surface of a plated or foil source (see manufacturer’s instructions).
- Select instrumentation that is sensitive enough to detect 185 becquerels (Bq) (0.005 microcurie) of the radionuclide contained in the gauge.
- Using the selected instrument, count and record background count rate.
- Check the instrument’s counting efficiency using a standard source of the same radionuclide as the source being tested or one with similar energy characteristics. The calibration source should be in the same configuration as the sample. Accuracy of standards should be within plus or minus 5 percent of the stated value and traceable to primary radiation standards such as those maintained by the National Institute of Standards and Technology.
- Calculate the counting efficiency of the detector.

$$\text{Efficiency in cpm/Bq} = \frac{[(\text{cpm from std}) - (\text{cpm from bkg})]}{\text{activity of std in Bq}}$$

where cpm = counts per minute
 std = standard
 bkg = background
 Bq = Becquerel

- Count each wipe sample; determine net count rate.
- For each sample, calculate and record estimated activity in becquerels (or microcuries). The activity of the sample in becquerels may be calculated using the following formula:

$$\text{Activity of sample [Bq]} = \frac{[(\text{cpm from wipe sample}) - (\text{cpm from bkg})]}{\text{efficiency in cpm/Bq}}$$

- Sign and date the list of sources, data, and calculations. Retain records for 3 years in accordance with LAC 33:XV.473.
- If the wipe test activity is 185 becquerels (0.005 microcuries) or greater, notify the radiation safety officer so that the source can be withdrawn from use and disposed of properly. Also, notify the department.

APPENDIX G

PERSONNEL MONITORING

I. PERSONNEL MONITORING

Personnel monitoring devices, more commonly referred to as personnel monitoring badges, shall be provided to measure the radiation dose for all individuals who are likely to receive more than 10% of the annual dose limit permitted by LAC 33:XV.410. An Applicant may provide calculations which demonstrate that an individual who is performing **routine operations** with the gauge is not likely to exceed the dose limit and is not required to be provided personnel monitoring.

However, the radiation dose to individuals performing **non-routine maintenance** such as installation, initial radiation surveys, relocation, removal from service, dismantling, alignment, replacement, disposal of the sealed source, and non-routine maintenance and repair of components related to the radiological safety of the gauge shall be measured by the individual(s) wearing a personnel monitoring device.

Submit the Personnel Monitoring Program, describing the proposed radiation dose monitoring program

II. DESCRIPTION OF PERSONNEL MONITORING DEVICES

A. General

Personnel monitoring badges must detect beta and gamma radiation, so verify the capabilities of available badges before making a selection. Dosimetry processors must hold accreditation from the National Voluntary Laboratory Accreditation Program (NVLAP) of the National Institute of Standards and Technology. A list of NVLAP accredited dosimetry vendors is available on the Internet at www.nist.gov.

Each order of badges includes a control badge for measuring the amount of background radiation the badges receive each monitoring period. This enables the background to be subtracted from the total reading to provide an accurate record of each worker's occupational radiation dose. When not in use the badges should be stored with the control badge to ensure accurate dosimetry records. The control badge must be stored in a low background radiation location and must be returned with the other badges each monitoring period.

B. Film Badges

Film badges are small pieces of x-ray film contained in a plastic holder. The film darkens in proportion to the amount of radiation it has been exposed to, so measurements of the film density provide a measurement of the wearer's radiation exposure. Film badges should be protected from extreme environmental conditions which may affect their ability to accurately record radiation. Film badges must be exchanged on a MONTHLY basis.

C. Thermoluminescent Dosimeters (TLD)

TLDs are personnel monitoring badges that contain small crystals capable of storing some of the energy from radiation. If the crystals are then heated to a specific temperature, they release the stored energy as light. The amount of light released is proportional to the amount of radiation the TLD badge received, which can be

measured to determine the badge wearer's dose. TLDs should be protected from extreme environmental conditions which may affect their ability to accurately record radiation. They must be exchanged at least every THREE months.

D. Optically Stimulated Luminescent Dosimeters (OSLDs)

OSLDs measure radiation through a thin layer of aluminum oxide. A laser light stimulates the aluminum oxide after use, causing it to become luminescent in proportion to the amount of radiation exposure. OSLDs must be exchanged at least every three months.

III. INSTRUCTIONS FOR USING PERSONNEL MONITORING DEVICES

A. General Instructions

If personnel monitoring is required, a whole body personnel monitoring badge (film, TLD or OSLD) shall be worn at all times when working with or around a fixed nuclear gauge. Each Authorized User or other worker will be assigned a badge, which can only be worn by the individual to whom it has been assigned. Badges are to be worn on the front of the torso, at or above the waist and below the shoulder. Badges must be promptly returned to the Radiation Safety Officer (RSO) at the end of each monitoring period to ensure rapid processing.

Recommended Work Practices for Personnel Monitoring

- ◆ Never leave badges in close proximity to a gauge or other radiation source
- ◆ Protect badges from moisture, intense heat or light and chemicals
- ◆ When not in use, store badges with their control badge in a low background radiation area

B. Special Instructions for New Hires and Lost/Damaged Badges

If personnel monitoring is required, to ensure accurate monitoring of occupational dose, an assigned badge will be ordered immediately for newly-employed workers. A spare/visitor badge may be provided to new workers until the assigned badge arrives. Spare badges may also be used to replace a badge that has been lost or damaged before the end of the monitoring period. To ensure their use by only one individual, spare badges will be imprinted with the worker's name or another form of identification. Workers assigned spare badges will have the dose recorded by the badge added to their occupational dose record. In the event of a lost/damaged badge, the RSO will estimate the worker's dose for the period the badge was worn, and notify the dosimetry processor if the individual's dosimetry record needs to be revised.

IV. PERSONNEL MONITORING RECORDS REQUIREMENTS

A. Records of Prior Occupational Dose

Prior to assigning a badge to a worker the worker's occupational radiation dose received during the current year will be determined. In addition, every reasonable effort must be made to obtain the individual's records indicating the individual's lifetime cumulative occupational radiation dose. If a worker is unable to provide the information, records from their previous employer will be obtained. Prior occupational dose records shall include all of the information required by LAC 33:XV.414.

B. Records of Individual Monitoring Results

Records of doses received by each monitored worker will be maintained as long as the company's license remains in effect. Dosimetry records will be kept in accordance with LAC 33:XV.476.

C. Annual Reports to Monitored Individuals

Each worker assigned a personnel monitoring badge will receive a written annual dose report describing the past year's monitoring results, as required by LAC 33:XV.1013. Records documenting that the reports have been furnished to monitored workers will be maintained.

D. Termination Reports to Monitored Individuals

Within 30 days of termination of employment, or within 30 days after the individual's exposure has been determined, whichever is later, each monitored worker will receive a written report summarizing the individual's occupational radiation dose, as required by LAC 33:XV.1013.C. Records documenting that the reports have been furnished to monitored workers will be maintained.

E. Records for Declared Pregnancies

The fetal dose will be closely monitored so as not to exceed 500 millirem. Female gauge operators that have declared themselves pregnant will be instructed to always wear their assigned badge at waist level to estimate the embryo/fetus dose. Recordkeeping requirements specified in LAC 33:XV.417, "Dose to an Embryo/Fetus" and 476.D.

F. Occupational Dose Limits for Minors

Minors will not exceed an annual occupational dose of 500 millirem. Recordkeeping requirements specified in LAC 33:XV.476 and 1013 "Notifications and Reports to Individuals", will be met.

G. Worker Overexposure Reports

When a report of an individual's exposure is sent to the department as required in LAC 33:XV.487 the exposed individual will also be notified as required in LAC 33:XV.491.

APPENDIX H

SECURITY OF PORTABLE GAUGES

I. Storage and Control of Licensed Radioactive Material

Licensees are required to secure sources of radiation from unauthorized removal or access. Licensees shall control and maintain constant surveillance of radioactive material that is in a controlled or unrestricted area and that is not in storage.

Despite these requirements, thefts of portable gauges do occur which can pose a potential risk to public health and safety.

II. Security Requirements

The Department is providing licensing guidance to applicants to assist them in improving their gauge security program. Improved security programs for portable gauges that comply with the provisions of this Appendix will be required in order to obtain or renew an Louisiana Radioactive Material License. This Appendix requires individuals using portable gauges under specific licenses to use a minimum of two independent physical controls that form tangible barriers to secure portable gauges from unauthorized removal, whenever portable gauges are not under the control and constant surveillance of the licensee. The proposed physical controls may also reduce accidental losses such as gauges falling out of a vehicle while in transit.

This Appendix applies to a licensee with a portable gauge regardless of the location, situation, and activities involving the portable gauge. At all times, the licensee would be required to either maintain control and constant surveillance of the portable gauge or use a minimum of two independent physical controls to secure the portable gauge. The Department expects that the physical controls would be designed and constructed of material suitable for securing the gauges from unauthorized removal. In addition, the Department expects that both of the controls must be defeated for the portable gauge to be removed to deter a theft by requiring a more determined effort to remove the gauge.

III. Securing a Portable Gauge at a Licensed Facility

Long-term storage of portable gauges is usually at a permanent facility listed on the license or license application. When a portable gauge is stored at a licensed facility, the licensee is required to use a minimum of two independent physical controls to secure the gauge. Examples of two independent physical controls to secure a portable gauge when stored at a licensed facility are as follows:

- a. The portable gauge or transportation case containing the portable gauge is stored inside a locked storage shed within a secured outdoor area, such as a fenced parking area with a locked gate.
- b. The portable gauge or transportation case containing the portable gauge is stored in a room with a locked door within a secured building for which the licensee controls access by lock and key or by a security guard.

- c. The portable gauge or transportation case containing the portable gauge is stored inside a locked, non-portable cabinet inside a room with a locked door if the building is not secured.
- d. The portable gauge or transportation case containing the portable gauge is stored in a separate secured area inside a secured mini-warehouse or storage facility.
- e. The portable gauge or transportation case containing the portable gauge is physically secured to the inside structure of a secured mini-warehouse or storage facility.

IV. Securing a Portable Gauge in a Vehicle

Licensees commonly use a chain and a padlock to secure a portable gauge in its transportation case to the open bed of a pickup truck while using the vehicle for storage. Because the transportation case is portable, a theft could occur if the chain is cut and the transportation case with the portable gauge in it is taken. If the licensee simply loops the chain through the handles of the transportation case, a thief could open the transportation case and take the portable gauge without removing the chain or the case. Because the transportation case is also portable, it must be protected by two independent physical controls if the portable gauge is inside. A lock on the transportation case or a lock on the portable gauge source rod handle would not be sufficient because the case and the gauge are portable.

A vehicle should be used for storage only for a short period of time when a gauge is in transit. Portable gauges should only be kept in a vehicle overnight if it is not practicable to provide temporary storage in a permanent structure. When a portable gauge is being stored in a vehicle, the licensee would be specifically required to use a minimum of two independent physical controls to secure the gauge. Examples of two such independent physical controls to secure portable gauges in these situations are--

- a. The locked transportation case containing the portable gauge is physically secured to a vehicle with brackets, and a chain or steel cable (attached to the vehicle) is wrapped around the transportation case such that the case cannot be opened unless the chain or cable is removed. In this example, the transportation case would count as one control since the brackets would prevent easy removal of the case. The chain or cable looped only through the transportation case handle is not acceptable.
- b. The portable gauge or transportation case containing the portable gauge is stored in a box physically attached to a vehicle, and the box is secured with (1) two independent locks, or (2) two separate chains or steel cables attached independently to the vehicle in such a manner that the box cannot be opened without the removal of the chains or cables, or (3) one lock and one chain or steel cable is attached to the vehicle in such a manner that the box cannot be opened without the removal of the chain or cable.
- c. The portable gauge or transportation case containing the portable gauge is stored in a locked trunk, camper shell, van, or other similar enclosure and is physically secured to the vehicle by a chain or steel cable in such a manner that one would not be able to open the case or remove the portable gauge without removal of the chain or cable. In this example, the transportation case would not count as one control because it could be easily removed.

V. Securing a Portable Gauge at a Temporary Job Site or at Locations other than a Licensed Facility

When a job requires storage of a portable gauge at temporary job sites or at locations other than a licensed facility, the licensee must use a permanent structure for storage if practicable to do so. When a portable gauge is stored at a temporary job site or at locations other than an authorized facility, the licensee is required to use a minimum of two independent physical controls to secure the gauge. Examples of two independent physical controls to secure portable gauges at such locations are--

- a. At a temporary job site, the portable gauge or transportation case containing the portable gauge is stored in a locked non-portable structure (e.g., construction trailer, sea container, etc.), and is physically secured by a chain or steel cable to the structure in such a manner that an individual would not be able to open the transportation case or remove the portable gauge without removing the chain or cable. A lock on the transportation case or a lock on the portable gauge source rod handle would not be sufficient because the case and the gauge are portable.
- b. The portable gauge or transportation case containing the portable gauge is stored inside a locked room within a temporary facility, and is physically secured by a chain or steel cable to a permanent or non-portable structure (e.g., large metal drain pipe, support column, etc.) such that an individual would not be able to open the transportation case or remove the portable gauge without removing the chain or cable.
- c. The portable gauge or transportation case containing the portable gauge is stored in a locked garage, and is within a locked vehicle or is physically secured by a chain or steel cable to the vehicle in such a manner that an individual would not be able to open the transportation case or remove the portable gauge without removing the chain or cable.
- d. The portable gauge or transportation case containing the portable gauge is stored in a locked garage, and is within a locked enclosure or is physically secured by a chain or steel cable to a permanent or non-portable structure in such a manner that an individual would not be able to open the transportation case or remove the portable gauge without removing the chain or cable.

VI. Controlling and Maintaining Constant Surveillance of a Portable Gauge

When a portable gauge is not secured with a minimum of two independent physical controls, the licensee is required to control and maintain constant surveillance of the gauge. This is consistent with LAC 33:XV.326.B, which states, "Each portable gauge licensee shall use a minimum of two independent physical controls that form tangible barriers to secure portable gauges from unauthorized removal, whenever portable gauges are not under the control and constant surveillance of the licensee." Control and constant surveillance is required when the gauge is not in storage, e.g., is in use or undergoing maintenance. The Department interprets "control and maintain constant surveillance" of portable gauges to mean being immediately present or remaining in close proximity to the portable gauge so as to be able to prevent unauthorized removal of the gauge.

APPENDIX I

DISPOSAL OR TRANSFER OF RADIOACTIVE MATERIAL

I. Description of Waste Disposal Program

Describe the procedures for handling, storing, and disposing of radioactive waste by checking the appropriate boxes. Identify the commercial waste disposal service employed and provide the Radioactive Material License number. If sealed sources and/or devices will be returned to the manufacturer, identify the manufacturer and provide the Radioactive Material License number.

- Commercial Waste Disposal Company will be used using these procedures

Name of Waste Disposal Company: _____

Vendor Radioactive Material License Number: _____

- Gauge containing the sealed source will be returned to manufacturer using these procedures

Name of Manufacturer: _____

Vendor Radioactive Material License Number: _____

- Gauge containing the sealed source will be disposed of using equivalent procedures, which are attached.

II. Verification

If a gauge containing radioactive material is bought, sold or transferred for disposal, verification of the transferor's and transferee's authorization to possess the radioactive material will be documented. A copy of each other's Radioactive Materials License will be exchanged and the transferor's license will be retained on file as evidence of an authorized transfer.

III. Documentation

As a minimum, documentation of the transfer will include the following:

- ◆ The material being transferred (gauge manufacturer name, model and serial number, type and activity of radioactive material, and source manufacturer name and model number)
- ◆ The date of the transfer
- ◆ The name, address, and license number of the transferor and transferee
- ◆ The signatures of the individuals shipping and/or receiving the gauge.

All transfer and disposal records shall be maintained on file for inspection purposes until license termination.

IV. Notification

The Louisiana Department of Environmental Quality should be notified of the disposal of gauges containing radioactive material as soon as practical following the transfer.

APPENDIX J OPERATING PROCEDURES

The following Operating Procedures will be used by all Authorized Gauge Users to remove, transport, use and return the gauge to storage. The Radiation Safety Officer must approve any deviations from these Operating Procedures.

Preparation for Work

1. If personnel monitoring is provided:
 - Always wear your assigned badge when using the gauge.
 - Never wear another person's badge.
 - Never store your badge near the gauge.
2. Before removing the gauge from its place of storage, ensure that, where applicable, each gauge source is in the fully shielded position and that in gauges with a movable rod containing a sealed source, the source rod is locked (e.g., keyed lock, padlock, mechanical control) in the shielded position. Place the gauge in the transport case and lock the case.
3. Sign out the gauge in a Utilization Log book (that remains at the storage location) including the date(s) of use, name(s) of the authorized users who will be responsible for the gauge, and the temporary jobsite(s) where the gauge will be used.
4. Block and brace the gauge to prevent movement during transport and lock the gauge in or to the vehicle. Follow all applicable Department of Transportation (DOT) requirements when transporting the gauge.

Using the Gauge

1. Use the gauge according to the manufacturer's instructions and recommendations and the Operating Procedures and Emergency Procedures.
 - The gauge will also be used in a manner that will keep radiation doses **As Low As is Reasonably Achievable (ALARA)** by:
 - Minimize the **TIME** spent in close proximity to the gauge (the shorter the time, the lower the dose);

- Maximize the **DISTANCE** from the gauge (doubling the distance reduces radiation intensity); and
 - Make use of available **SHIELDING** to block out radiation.
2. Establish and maintain constant surveillance of the restricted area and always keep unauthorized persons away from the gauge.
 3. Do not touch the unshielded source rod with your fingers, hands, or any part of your body.
 4. Do not place hands, fingers, feet, or other body parts in the radiation field from an unshielded source.
 5. Unless absolutely necessary, do not look under the gauge when the source rod is being lowered into the ground. If you must look under the gauge to align the source rod with the hole, follow the manufacturer's procedures to minimize radiation exposure.
 6. After completing each measurement in which the source is unshielded, immediately return the source to the shielded position.
 7. Always maintain constant surveillance and immediate control of the gauge when it is not in storage. At job sites, do not walk away from the gauge when it is left on the ground. Take actions necessary to protect the gauge and yourself from danger of moving heavy equipment.
 8. Always keep unauthorized persons away from the gauge.
 9. Perform routine cleaning and maintenance according to the manufacturer's instructions and recommendations.
 10. When the gauge is not in use at a temporary jobsite, place the gauge in a secured storage location (e.g., locked in the trunk of a car or locked in a storage shed).
 11. Do not smoke, eat, drink, or store any of these types of products in the use or storage area of the gauges containing radioactive material.

Completing the Work

1. Prior to transporting the gauge, ensure that, where applicable, each gauge source is in the fully shielded position. Ensure that in gauges with a movable source rod, the source rod is locked in the shielded position (e.g., keyed lock, padlock, mechanical control). Place the gauge in the transport case and lock the case. Block and brace the case to prevent movement during transportation. Lock the case in or to the vehicle.

2. Return the gauge to its proper locked storage location at the end of the work shift.
3. Log the gauge into the Utilization Log when it is returned to storage.
4. After making changes affecting the gauge storage area (e.g., changing the location of gauges within the storage area, removing shielding, adding gauges, changing the occupancy of adjacent areas, moving the storage area to a new location), reevaluate compliance with public dose limits and ensure proper security of gauges.

Maintaining the Gauge

1. Personnel monitoring badges will always be worn when performing non-routine maintenance on the gauge.
2. Routine cleaning and maintenance of the gauge will be performed in accordance with the manufacturer's instructions and recommendations.
3. No maintenance will be performed on the gauge that includes removing the radioactive source from the gauge. Any maintenance that is not included in the manufacturer's instructions and recommendations will be performed by the manufacturer or by another person who is specifically licensed to perform the maintenance.
4. A Quarterly Inventory of all gauges will be performed by the Radiation Safety Officer or their designee. Records of the inventory shall be maintained on file for inspection purposes and shall be retained for at least 3 years following the date the record was created.
5. Leak testing of the radioactive sources will be performed and documented every six months in accordance with the Radioactive Material License. Gauges that do not have a current leak test will not be used.

**APPENDIX K
EMERGENCY PROCEDURES**

If the source fails to return to the shielded position (e.g., as a result of being damaged, source becomes stuck below the surface) or if any other emergency or unusual situation arises (e.g., the gauge is struck by a moving vehicle, is dropped, or is in a transport vehicle involved in an accident) specific response actions must be taken.

THE INDIVIDUAL AT THE ACCIDENT SCENE MUST DO THE FOLLOWING:

- **RESTRICT ACCESS** Immediately secure the area and establish a restricted area boundary. Keep individuals at least 15 feet away from the gauge until the situation is assessed and radiation levels are known. However, perform first aid for any injured individuals and remove them from the area only when medically safe to do so.
- **MAINTAIN SURVEILLANCE** Maintain constant, direct surveillance of the restricted area by an Authorized User.
- **DETAIN INDIVIDUALS** If any heavy equipment is involved, detain the equipment and operator until it is determined there is no contamination present.
- **REMAIN AT THE SCENE** Gauge users and other potentially contaminated individuals should not leave the scene except for immediate medical attention.
- **NOTIFY** Notify the persons in the order listed below of the situation:

NAME	WORK PHONE NUMBER	HOME PHONE NUMBER
_ _ _ _ _ RSO	_____	_____
_____	_____	_____
_____	_____	_____
_		

Fill in with (and update, as needed) the names and telephone numbers of appropriate personnel (e.g., the Radiation Safety Officer (RSO), or other knowledgeable licensee staff, licensee's consultant, gauge manufacturer) to be contacted in case of emergency.

- **FOLLOW DIRECTIONS** Follow the directions provided by the person contacted above.

THE RSO AND LICENSE MANAGEMENT MUST DO THE FOLLOWING

- Arrange for a radiation survey to be conducted as soon as possible by a knowledgeable person using appropriate radiation detection instrumentation. This person could be a licensee employee using a survey meter located at the job site or a consultant. To accurately assess the radiation danger, it is essential that the person performing the survey be competent in the use of the survey meter.

- If gauges are used for measurements with the unshielded source extended more than 3 feet below the surface, contact persons listed on the emergency procedures need to know the steps to be followed to retrieve a stuck source and to convey those steps to the staff on site.
- Make necessary notifications to local authorities as well as the **Louisiana Department of Environmental Quality, 225-765-0160** (staffed 24 hours a day). Immediate notification to the Department is required when gauges containing radioactive material are lost or stolen, when gauges are damaged or involved in incidents, and when it becomes apparent that attempts to recover a source stuck below the surface will not be successful.
- Reports to the Department must be made within the reporting timeframes specified by the regulations.
- Reporting requirements are found in **LAC 33:XV.341**.
- Recovery operations and decontamination must only be attempted by properly trained and licensed individuals.